Aston University
BIRMINGHAM UK

Aston Institute for Forensic Linguistics

# A forensically focussed examination of female voice and speech patterns

**James Tompkinson | j.tompkinson@aston.ac.uk**

## Introduction

- New project proposed to deliver a forensically focussed linguistic and phonetic examination of variation within the voice and speech patterns of female speakers.
- Aims to address an under-researched area within forensic speech science.
- Large scale UK forensically focused database research in forensic speech science (e.g. DYViS project, WYRED database) has analysed male speech only.
- Women comprise 26% of defendants in England and Wales.

## Data

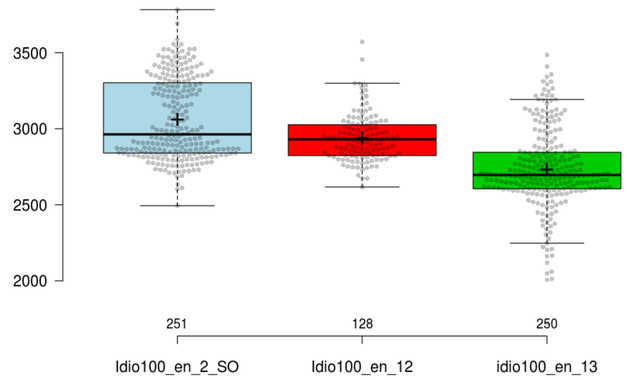
- Secondary data analysis using material from AIFL Centre for Forensic Text Analysis' "100 idiolects" project.
- Recorded interviews with 91 female speakers aged 18-25.
- All interviews recorded via Zoom, spontaneous conversation with researcher across 10+ minutes per interview.
- A range of dialects and speaker ethnicities within data. Notable dialect groups include:
  - 29 West Midlands contact variety speakers
  - 22 London/SE-area contact variety speakers

## Project aims

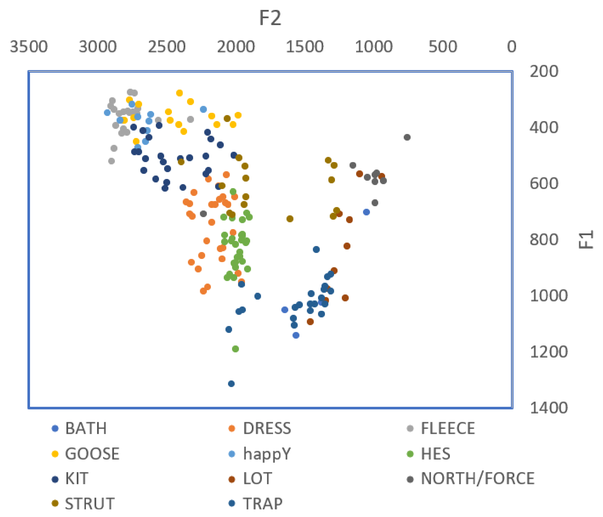
- Generate analysis-driven typicality assessments for a range of common acoustic measures used in forensic speaker comparison analysis. These typicality assessments are yet to be systematically addressed for female speakers of UK-based varieties of English.
- Comparison of phonetic features within and between female speakers of two geographically different UK contact varieties – West Midlands and London/South East-area.
- An assessment of whether the same features which have proved successful for speaker comparison analysis of male speakers also apply to female speech.
- An evaluation of the usefulness of secondary data analysis for forensically focussed speech science research.

## Proposed analysis

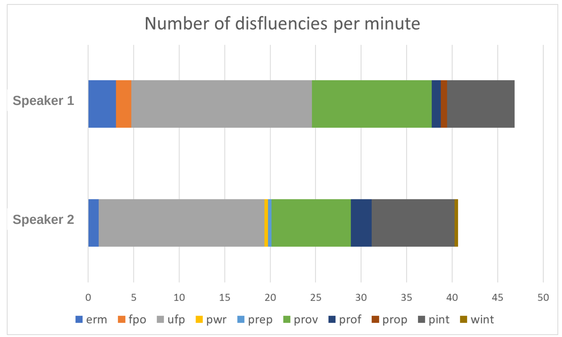
- **F3 analysis** – generate reference population statistics for a common acoustic measure which is notably less susceptible to dialect variation than other variables.




- **Vowel and consonant analysis –** commonly used analysis in forensic speaker comparison. Generate typicality assessments for key vowels within accent groups, reference data for vowel variation and F1/F2 measurements, and auditory analysis of key sounds.




- **Disfluency analysis –** analysis of hesitancy and fluency using Taxonomy of Fluency Feature Analysis (TOFFA, see McDougall and Duckworth, 2017).




- **Voice quality analysis –** using modified version of Vocal Profile Analysis Scheme adapted for forensic speaker comparison purposes (developed by J P French Associates, see San Segundo et al, 2019).

| C. PHONATION FEATURES | | | | | |
|---|---|---|---|---|---|
| Voicing type | Voice | | | | |
| | Falsetto | | | | |
| | Creak | | | | |
| | Creaky | | | | |
| Laryngeal frication | Whisper | | | | |
| | Whispery | | | | |
| | Breathy | | | | |
| | Murmur | | | | |
| Laryngeal irregularity | Harsh | | | | |
| | Tremor | | | | |

## Conclusions

- Aim of project is to combine analytical methods in auditory and acoustic phonetics with secondary data analysis to address a gap in current forensic speech science research.
- Use of data previously collected within AIFL for new purposes.
- Overall aims are to develop reference data for practitioners and address key research issues within forensic speech science.